# Reviewing Map and Globe Skills

## Using a Legend

There is an old story about a famous king named Arthur. He ruled England long ago. When Arthur was a boy, he had a teacher named Merlin. Merlin was a wizard. He wanted to give the boy special training that would help him rule wisely. As part of Arthur's training, Merlin turned the boy into a bird and let him soar above the earth.

"Can you see England?" Merlin asked.

"Yes, I can see its rivers, valleys, and towns," Arthur answered.

"No, no," Merlin yelled impatiently. "I mean can you see England's borders, where the country begins and ends?"

"No," Arthur said. "That I cannot see. There are no lines on the earth that show borders."

Merlin smiled. He had wanted Arthur to learn that a country's boundaries are not made by nature. They are made by people.

The best way to see a country's boundaries is by looking at a **map**. A map is a drawing of all or part of Earth. Symbols on these drawings show where one country ends and another begins. These symbols can be lines, colors, or dots. A **legend**, or key, on or next to the map explains the symbols. On page 3 is a map that shows Europe today. Study the map and then answer the questions.

1. What symbol on the map shows boundaries?
2. (a) Today England is a part of the United Kingdom. What other countries belong to the United Kingdom? (b) How can you tell?
3. Sometimes a country's borders lie along a mountain range, desert, or body of water. Borders like these are natural boundaries. Which of England's borders is a natural boundary?
4. What are the capitals of the following countries? (a) France (b) Norway (c) Italy (d) Poland (e) Bulgaria (f) Italy

Reykjavik
ICELAND
FINLAND
Helsinki
NORWAY
Oslo
Stockholm
SWEDEN
URAL MTS.
Moscow
SOVIET UNION
SCOTLAND
N. IRELAND
Dublin
IRELAND
UNITED KINGDOM
WALES
ENGLAND
London
NORTH SEA
DENMARK
Copenhagen
BALTIC SEA
NETH.
Amsterdam
Brussels
BELG.
Rhine R.
Berlin
E. GERMANY
Wersaw
POLAND
Bonn
W. GERMANY
Prague
CZECHOSLOVAKIA
ATLANTIC OCEAN
Paris
LUX.
Danube River
Vienne
AUSTRIA
LIECHTENSTEIN
Budapest
HUNGARY
RUMANIA
Bucherest
BLACK SEA
FRANCE
Bern
SWITZ.
Belgrade
YUGOSLAVIA
BULGARIA
Sofia
ITALY
Rome
Tirane
ALBANIA
GREECE
Athens
Ankara
TURKEY
ASIA
PORTUGAL
Lisbon
Madrid
SPAIN
MEDITERRANEAN SEA
AFRICA
Political Map of Europe
Capital cities
National boundaries
Rivers

## The Middle East: Elevation

**Elevation key**

| Feet | Meters |
|---|---|
| 14,000 | 4,000 |
| 7,000 | 2,000 |
| 1,500 | 500 |
| 700 | 200 |
| 0 | 0 |
| Below sea level | Below sea level |

★ Capital city • Other city

**Highest point**—Mt. Demavend
Elevation: 18,602 ft/5,670 m

**Lowest point**—Dead Sea
Depth:-1296 ft/-395 m

**Longest river**—Euphrates R.
Length: 1,715 mi/2,760 km

**Largest lake**—Lake Urmia
Area: 2,239 sq. mi./5,800 sq. km

**Area**—4,710,665 sq. mi/12,200,568 sq. km

**Population**—242,616,000

# Reading an Elevation Map

If you were to fly above the earth as Arthur did, you too would see what the land looks like. You would see mountains, hills, valleys, and plains. Maps can show these things too.

**Elevation,** or the height of land, is always measured from the surface of the ocean, or sea level. Elevation maps use color to show differences in **altitude,** or the height of land. For example, the area colored in brown on the map above is land that rises 7,000 feet or 2,000 meters above sea level.

Elevation, however, is only part of the story. In some places the land rises and falls sharply within a short distance. This is especially true of mountain ranges. Such places not only have high elevation but also high relief. Maps use shading to show high relief.

It is important to remember that high elevation does not always mean high relief. A **plateau** is flat or gently rolling land that stands high above sea level. There are no sudden drops or rises in elevation on a plateau. It therefore has a low relief.

Use the legend and the shading on the map of the Middle East to answer the following questions:

1. What color on the map is used to show land that rises 700 feet (200 meters) above sea level?
2. (a) What mountain range lies in Iran?
   (b) Name one other mountain range in the region. (c) How high are the mountains in this range?
3. (a) What is the elevation of the land in the Plateau of Iran?
   (b) Does this land have high relief or low relief?
4. Name a place that lies below sea level.

# Using Scale

Which map above shows the larger area—the map on the left or the map on the right? Be careful how you answer the question. Do not let the size of the maps fool you.

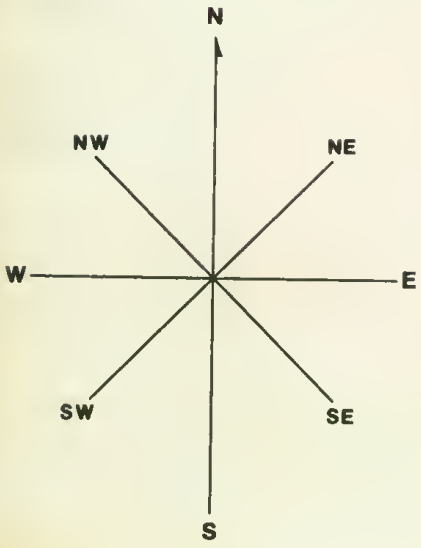
In fact, the size of a map has nothing to do with the size of a place. The small map on the left shows the entire continent of Africa. The large map on the right shows only one country in Africa—Mali. So the smaller map shows a much, much larger area.

To help you figure out how large an area really is, mapmakers provide a **scale**. The length of a scale stands for a certain number of miles or kilometers on the map. You can use a ruler to find out how long the scale is. Or you can make your own ruler by marking the beginning and end of the scale on the edge of a piece of paper.

Study the maps and answer the following questions:

1. (a) How many miles does an inch stand for in the map on the left? (b) How many miles does an inch stand for in the map on the right? (c) On which map does an inch stand for more miles?
2. (a) Find Mali on the map of Africa. Measure the distance between Timbuktu and Bamako. (b) Now measure the same distance on the map of Mali. (c) Is your answer the same or different?

# Using Directions




If you have ever given somebody directions to your house, you probably used words like *left* and *right* or *near* and *far*. Words like these are useful when you are telling someone how to get to your house. However, these kinds of words are not very useful when you are going from one part of Earth to another. People need a different way of giving directions.

Two guides help. The most northern point on Earth is the **North Pole.** The most southern point on Earth is the **South Pole.** No matter where you are on Earth, north is always in the direction of the North Pole. South is always in the direction of the South Pole. When you face north, east is to the right of north. West is to the left. These directions are called **cardinal directions.** There are also "in-between" directions called **intermediate directions**—northeast, northwest, southeast, and southwest. Many maps have an arrow that shows all or some of these directions. This arrow is called a **compass rose.**

The map on page 9 shows the **continents,** the largest bodies of land on Earth. It also shows the largest bodies of water, the **oceans.** Use the map and your knowledge of directions to answer the following questions:

1. Which continent is southeast of the Indian Ocean?
2. What four continents are west of the Pacific Ocean and east of the Atlantic?
3. Which continent is just south of Europe?
4. Which continent is south of Africa?
5. Find Asia. Is it northeast or northwest of Australia?
6. (a) Describe Europe's location in relation to Africa. (b) Describe it in relation to Asia.
7. (a) What ocean is north of Europe? (b) What ocean is west of Europe?
8. Find the Isthmus of Panama. (An **isthmus** is a narrow strip of land that connects two larger pieces of land.) (a) What continent is north of the Isthmus? (b) What continent is south of the Isthmus?
9. (a) Is the Isthmus of Suez at the northeast or northwest corner of Africa? (b) What continents does this isthmus connect?
10. What two continents are separated by the Ural Mountains?

11. (a) What is the most southern point on Earth? (b) Which continent is closest to it?
12. (a) What is the most northern point on Earth? (b) Which ocean is closest to it?
13. (a) Describe South America's location in relation to Africa. (b) Describe it in relation to North America.
14. What ocean is east of Africa and west of Australia?
15. (a) What ocean is west of the Isthmus of Panama? (b) What ocean is east of it?
16. The islands of which continent extend farthest north?
17. (a) What ocean is north and east of South America? (b) What ocean is west of South America?
18. Describe the location of the Isthmus of Panama in relation to South America.
19. If you were at the North Pole and took a step away, in which direction would you have traveled?
20. Which continent lies east of Asia? (Clue: Remember Earth is round.)

**The World: Continents and Oceans**

# Using a Grid

If you have ever had to find a seat in a stadium, you know that you begin by studying your ticket. If it says your seat is B2, you must find the second seat in row B. If your friend's ticket reads B3, she will be in the seat next to yours. A person holding a ticket for C2 will be in the seat behind you.

Street and road maps use a similar system to help people find a particular place. Mapmakers divide such a map into a **grid**—a series of lines that cross each other at right angles. The lines of the grid are labeled with letters and numbers.

To find a place on a grid map, you must first look up the name of the place in the map's index. The index uses letters and numbers to tell you where every place on the map is located. The numbers and letters help you find the correct grid location on the map.

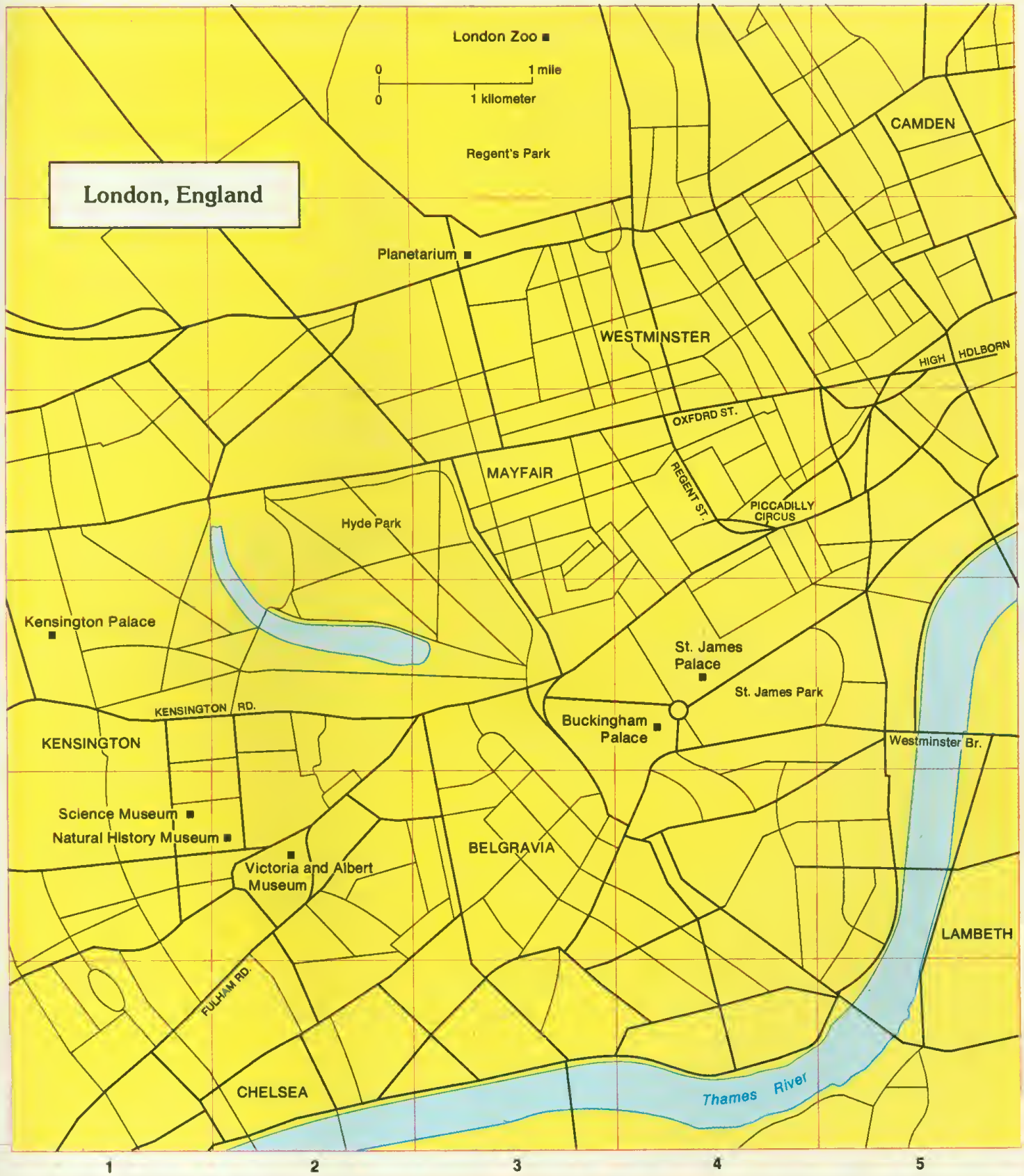
For example, suppose you are in London, England, and you want to visit Buckingham Palace, the home of the Queen of England. The index below tells you that the palace is located at D4. Look on the map and find the rectangle where row D meets row 4. Buckingham Palace is in that rectangle.

Use the index and the map to answer the following questions:

1. (a) In what grid is the Science Museum located? (b) What museums are nearby?
2. Piccadilly Circus is the name of a famous area in London. It is the place where many busy streets meet. Find Piccadilly Circus on the map. Now find St. James' Palace. What route would you take to get from Piccadilly Circus to St. James' Palace?
3. Which is closer to the London Zoo, the Planetarium or Kensington Palace?
4. Find Kensington Palace on the map. What is the grid location of the museum closest to it?

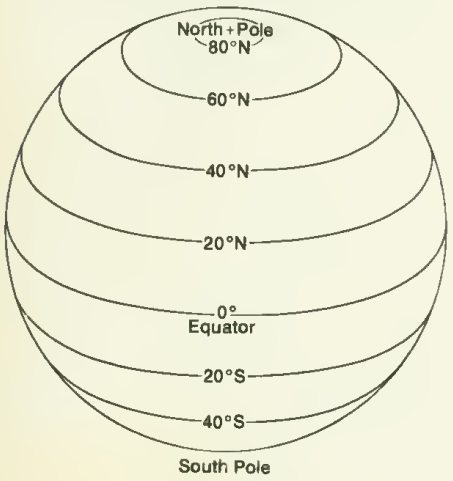
**Index**

Buckingham Palace D 4
Planetarium B 3
London Zoo A 3
Kensington Palace D 1
St. James Palace D 4
Science Museum E 1
Natural History Museum E 2
Victoria and Albert Museum E 2

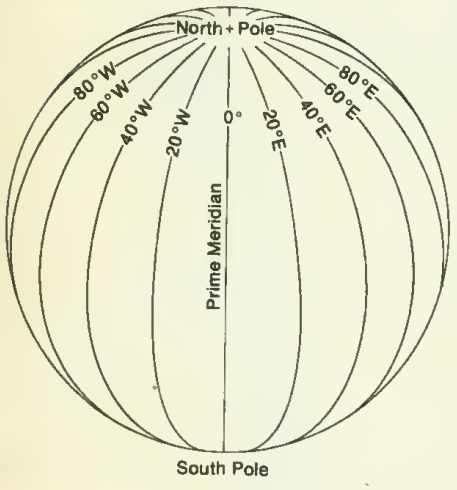

London, England
London Zoo
0
1 mile
0
1 kilometer
Regent's Park
CAMDEN
Planetarium
WESTMINSTER
HIGH HOLBORN
OXFORD ST.
MAYFAIR
REGENT ST.
PICCADILLY CIRCUS
Hyde Park
Kensington Palace
St. James Palace
St. James Park
KENSINGTON RD.
KENSINGTON
Buckingham Palace
Westminster Br.
Science Museum
Natural History Museum
Victoria and Albert Museum
BELGRAVIA
LAMBETH
FULHAM RD.
CHELSEA
Thames River
A
B
C
D
E
F
1
2
3
4
5

# Using Latitude and Longitude

**Latitude Lines (Parallels)**




**Longitude Lines (Meridians)**




Have you ever wondered how an airplane pilot can fly long distances without getting lost? After all, there are no landmarks thousands of feet above the earth.

Airplane pilots use grids to figure out where on Earth they are. So do pilots of ocean liners. The grid they use is much like the one used on a road map. However, a pilot's grid is not labeled with letters and numbers. Instead, it uses degrees to mark off two sets of imaginary lines.

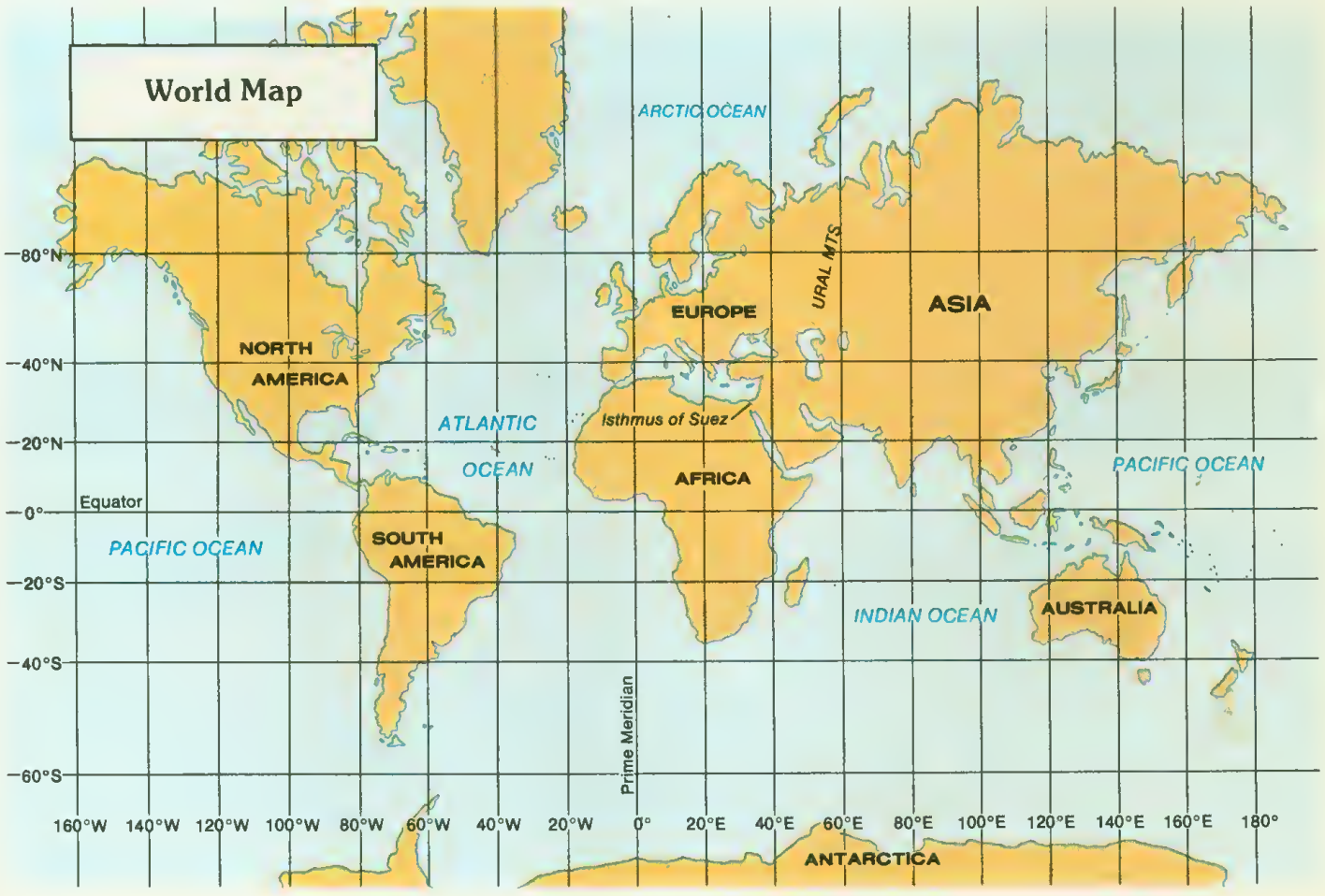
Look at the drawings on this page. One set of lines, called **parallels of latitude,** circles Earth from west to east. These lines are called parallels because the distance between them is always the same. The other set of lines, called **meridians of longitude,** runs from the North Pole to the South Pole. These lines do not circle Earth. They are also not parallel lines because they meet at the poles.

The starting point for measuring parallels of latitude is the equator. It is halfway between the North Pole and the South Pole. The equator is numbered 0° latitude. All places north of the equator are north latitude. All places south of the equator are south latitude. The places farthest away from the equator are the poles. The North Pole is 90° north latitude. The South Pole is 90° south latitude. As you can see, the longest parallel of latitude is the equator. The shortest parallels of latitude are at the poles.

The starting place for measuring longitude is also a 0° line. That line is called the **prime meridian,** or first meridian. All lines east of the prime meridian are east longitude. Those west of the prime meridian are west longitude. There is one line, however, that is the same distance east and west of the prime meridian. It is the line numbered 180° longitude. It is exactly halfway around the world from the prime meridian.

With longitude the grid is complete. Any place on Earth can be located. Answer the questions on page 13, and you will see that this is true.

1. What is the latitude and longitude of the Isthmus of Suez?
2. On which continent would you find each of the following locations?
   (a) 20°S, 60°W (b) 20°S, 120°E (c) 60°N, 120°E
   (d) 0°, 30°E (e) 60°N, 120°W (f) 50°N, 15°E
   (g) 80°S, 130°E
3. In which ocean would you find each of the following locations?
   (a) 40°S, 90°E (b) 40°N, 160°E (c) 30°S, 15°W
4. In what ocean does the prime meridian and the equator meet?
5. Which continent lies farther south? (a) Australia or South America (b) Europe or Asia (c) North America or Asia
6. Which continent lies farther east? (a) North America or South America (b) Europe or Africa
7. The large island northeast of North America is Greenland. Which parallel of latitude touches Greenland's southernmost point?



# Following Circle Routes

**Great Circles: Lines of Longitude**

All maps are **projections.** A projection is a way of drawing Earth's curved surface on a flat map. Therefore, maps always distort some parts of Earth. For example, on paper, the shortest distance between two points on Earth seems to be a straight line. Earth, however, is not flat like a sheet of paper. It is a **sphere.** This means it is round, somewhat like an orange. The only way to connect two points on a round surface is to draw a curved line.

On Earth, that curved line is always part of a **great circle.** A great circle is any circle that cuts Earth in half. The equator is a great circle. So are all the lines of longitude and their opposites. For example, if you look at the drawing, you will see that 20° W and 160° E divide Earth in half. So do 90° E and 90° W.

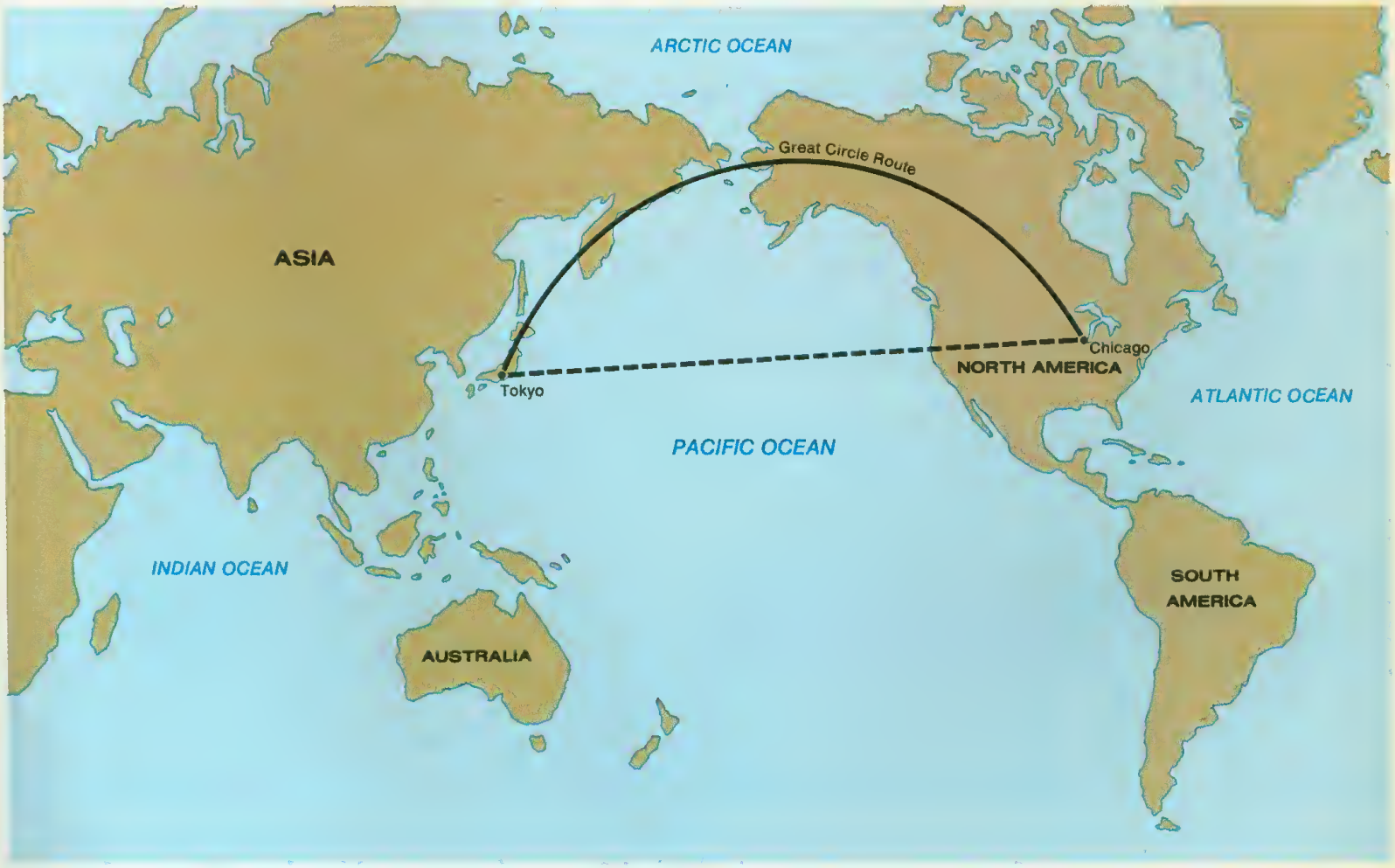
Below are two maps. The map on the left is a view of Earth with the North Pole in the center. The map suggests that the shortest

way to get from Tokyo to Chicago would be to fly over Asia and across the Arctic Ocean. This is a great circle route.

Now look at the map on the right. On this map, the shortest route between Tokyo and Chicago seems to be straight across the Pacific Ocean.

Which is really shorter? To answer this question, you need a globe and a piece of string. Put one end of the string on Tokyo. To get to Chicago, follow the route shown on the map on the left. Stretch the string across Asia and over the Arctic Ocean. Mark the distance on the string with a crayon or felt-tip pen.

Now use the same string and the globe to trace the route shown on the map on the right. Put your string on Tokyo and trace the route across the Pacific Ocean. Mark the distance on the string with your finger. Which route is shorter, the great circle route or the one across the Pacific?



# Understanding Earth's Movements

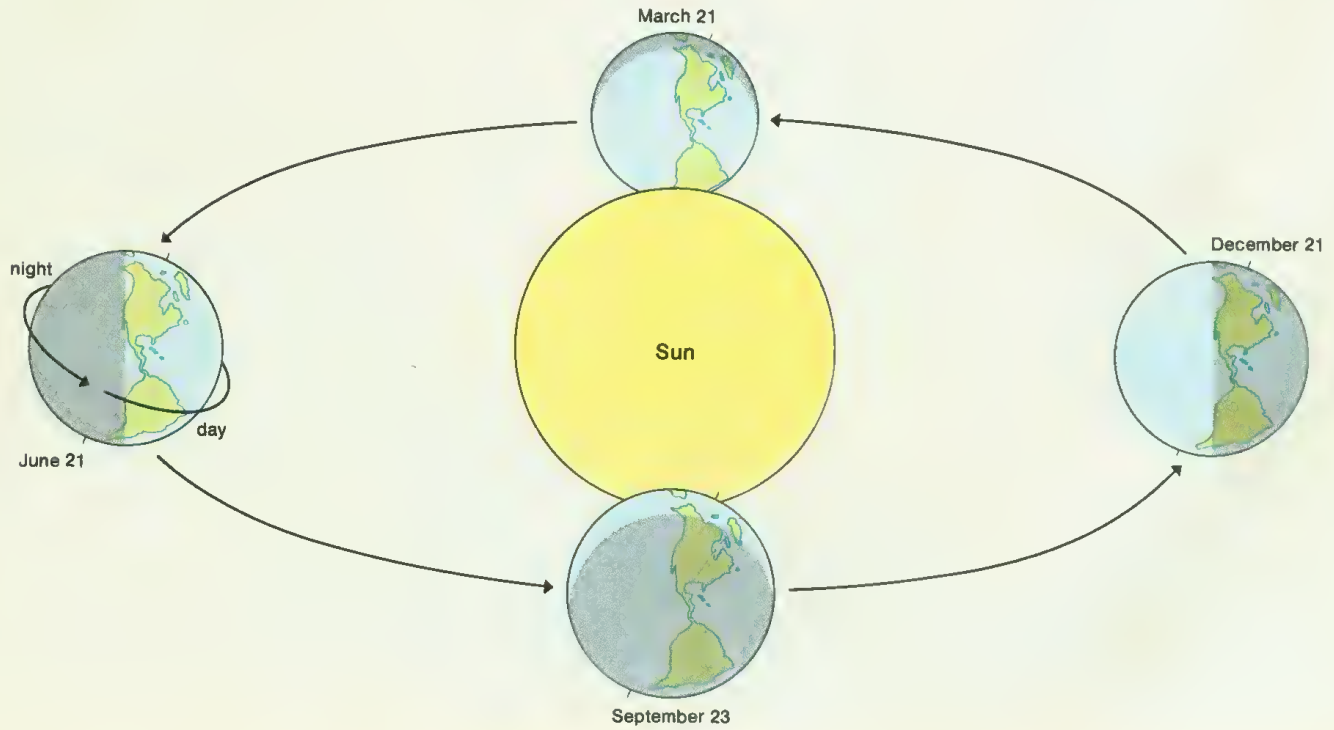
Earth never stands still. It is constantly spinning, or rotating, on its axis. Earth's axis is an imaginary line that extends from the North Pole to the South Pole. Every 24 hours Earth makes one complete turn, or **rotation,** on its axis. That is why we have day and night.

In addition to spinning on its axis, Earth also turns, or **revolves**, around the sun. Every year Earth makes one complete journey, or **revolution,** around the sun.

As Earth turns, it leans or tilts slightly on its axis. That tilt never changes. So for one part of the year, Earth's northern half, or **hemisphere,** points toward the sun. For the rest of the year, it points away. When the Northern Hemisphere points away from the sun, the Southern Hemisphere points toward it.

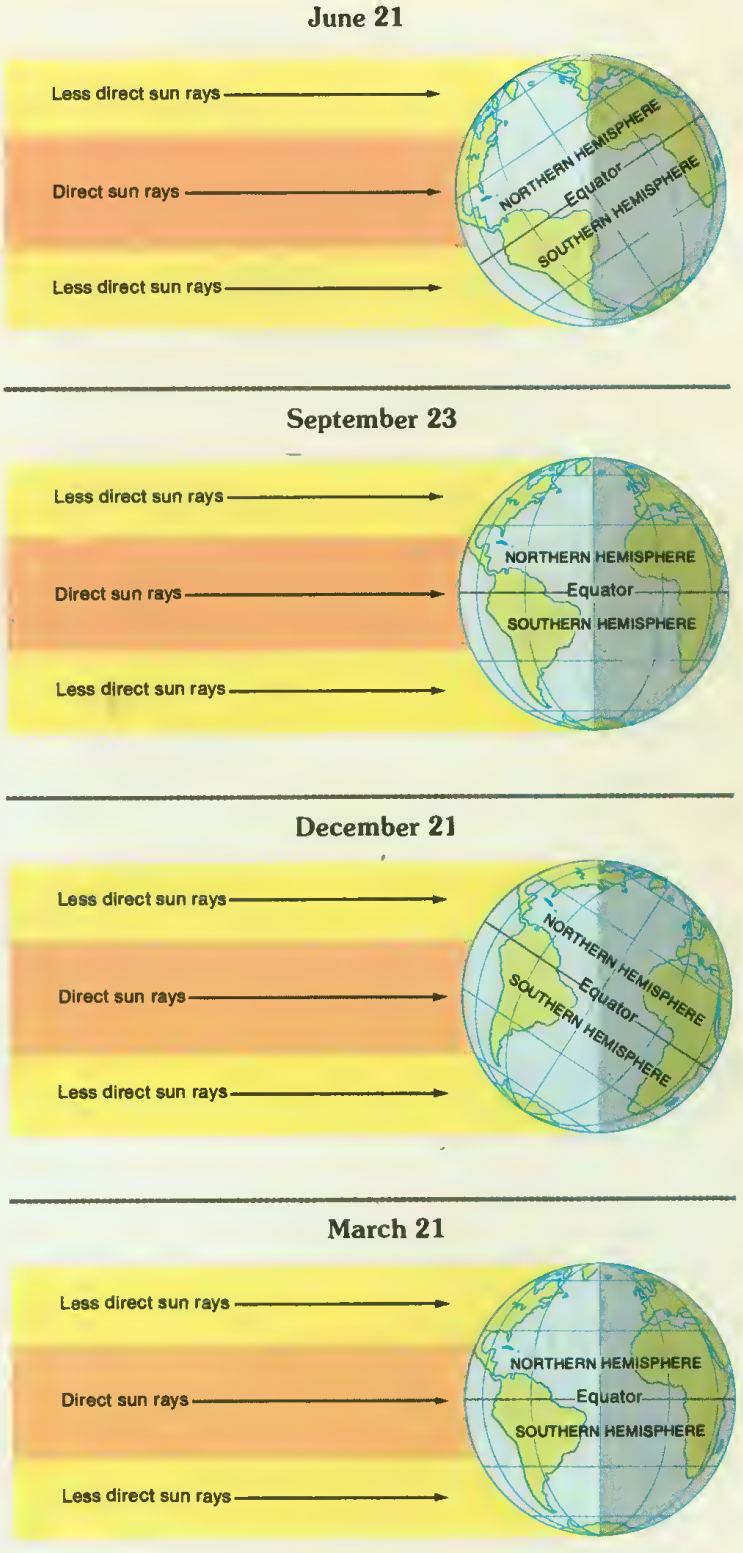
In the hemisphere that points toward the sun, it is summer. The temperatures are warmer and there are many hours of daylight. Indeed, near that hemisphere's pole, the days are so long that the sun never sets.

In the hemisphere that faces away from the sun, the temperature is much colder and the days are shorter. It is winter. At that hemisphere's poles, the sun never rises and it is dark until spring.



Use the drawings and the information on page 16 to answer the following questions.

1. Find the equator on the drawing. Brazil lies south of the equator, in the Southern Hemisphere. (a) When does Brazil have winter? (b) When does it have summer?
2. North America lies north of the equator, in the Northern Hemisphere. (a) When does North America have summer? (b) Winter?
3. (a) At what times of the year does the Northern Hemisphere lean neither toward the sun nor away from it? (b) What seasons does the Northern Hemisphere have at these times?
4. (a) When does the Southern Hemisphere lean neither toward the sun nor away from it? (b) What seasons does the Southern Hemisphere have then?
5. (a) What is the first day of autumn in the Northern Hemisphere? (b) When it is autumn in the Northern Hemisphere, what season is it in the Southern Hemisphere?
6. (a) What is the first day of spring in the Southern Hemisphere? (b) When it is spring there, what season is it in the Northern Hemisphere?
7. (a) What are summers like at the North Pole? (b) When it is summer at the North Pole, what season is it at the South Pole?
8. (a) What are winters like at the South Pole? (b) When it is winter at the South Pole, what season is it at the North Pole?

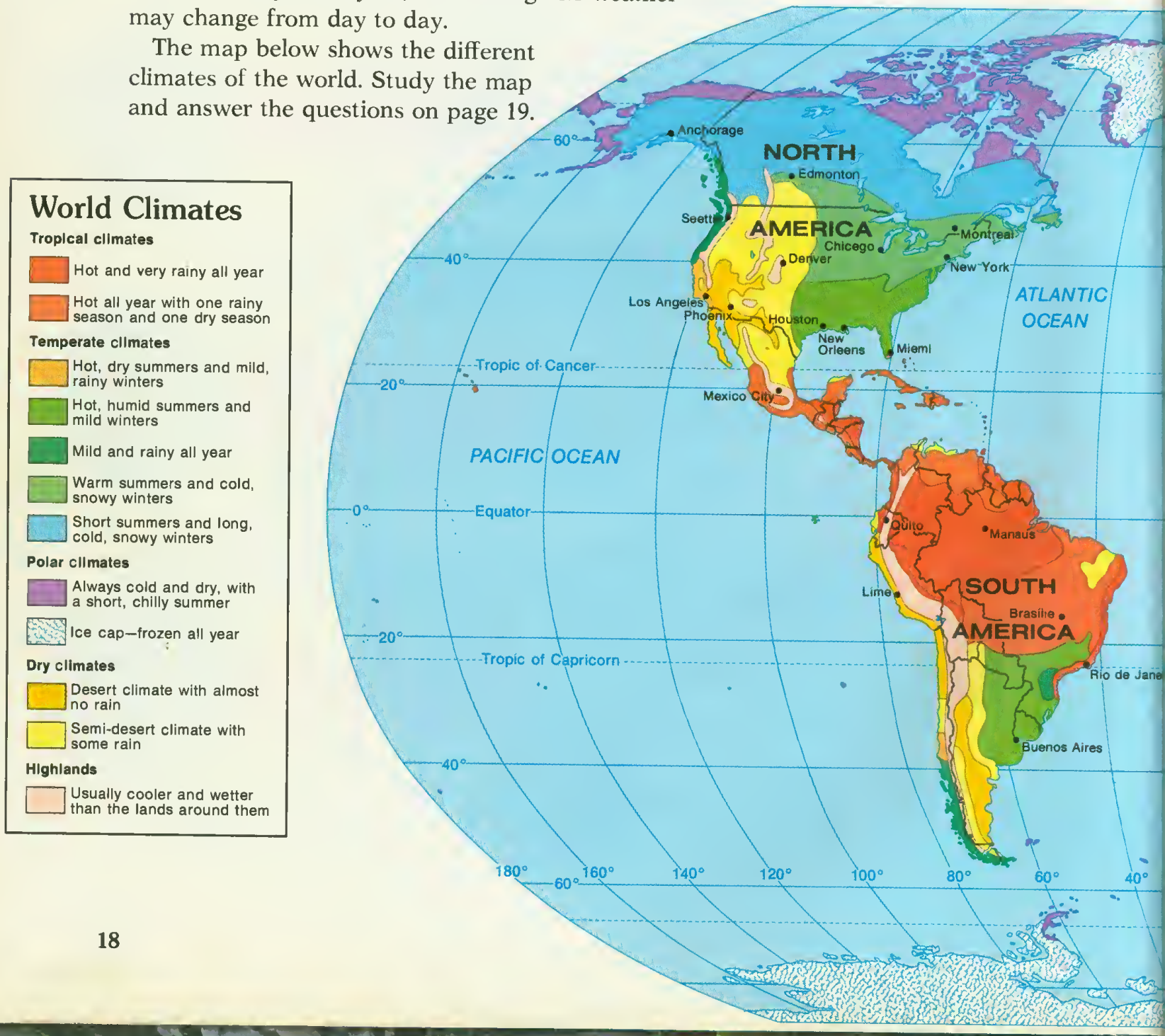


# Reading a Climate Map

Everybody talks about the weather. They wonder if the day will be sunny or gray. They worry about how much snow or rain is on the way. Sun, rain, snow, wind, clouds, and temperature are all part of weather.

**Climate** describes weather too. Climate is the usual weather of a place over a long period of time. It tells you if the place you live in has hot, dry summers or cold, rainy ones. A place's climate does not change from year to year, even though its weather may change from day to day.

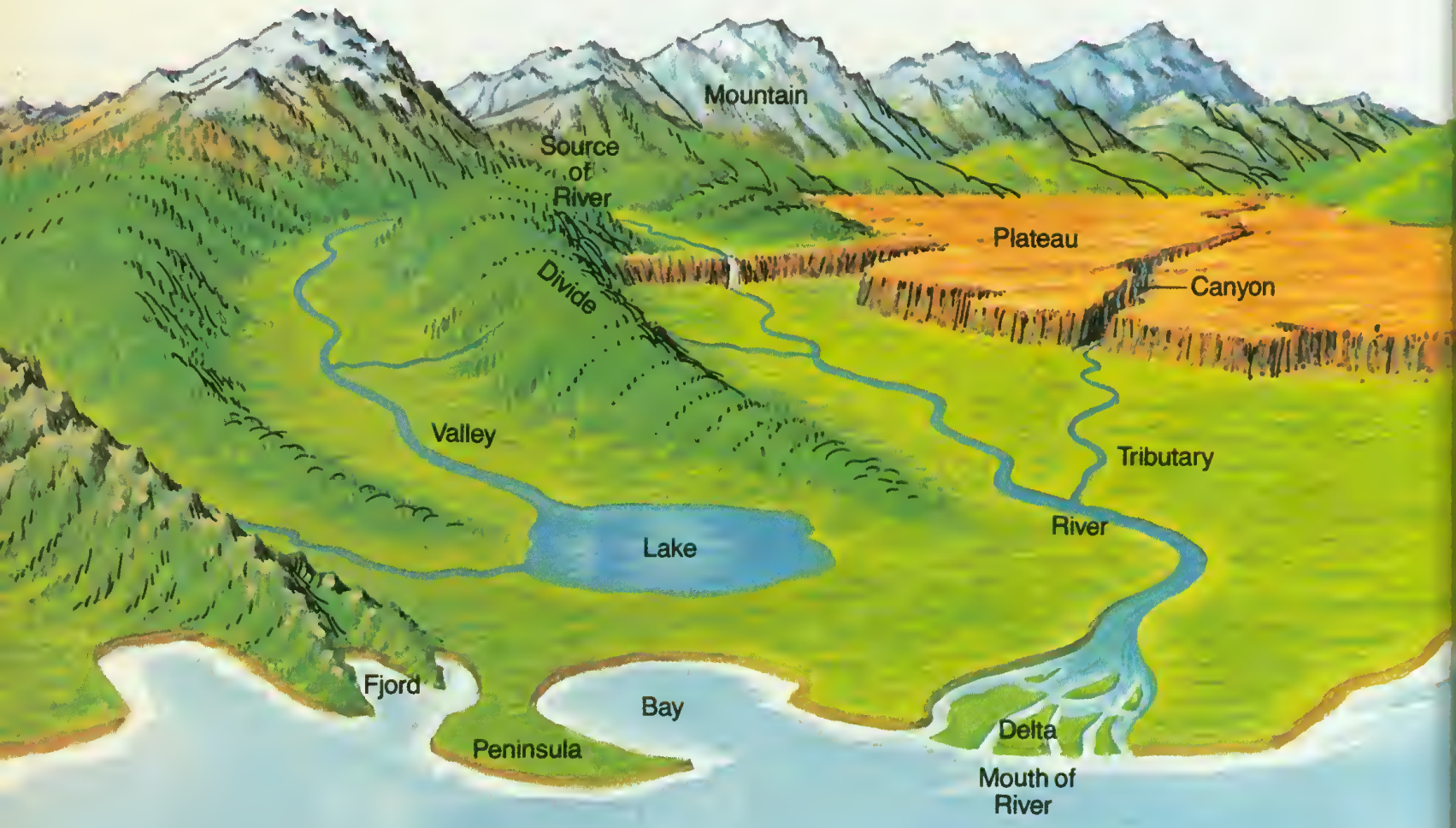
The map below shows the different climates of the world. Study the map and answer the questions on page 19.



1. (a) What two colors on the map stand for polar climates?
   (b) Where are places with polar climates located?
2. (a) What two colors on the map stand for tropical climates?
   (b) Where are places with tropical climates located?
3. Cairo in North Africa has a desert climate. Describe Cairo's climate.
4. Find Nairobi in East Africa and Johannesburg in South Africa. How do the climates of these two African cities differ?

# Words for Land and Water

**archipelago** a group of islands
**basin** the land drained by a river; land surrounded by higher land
**bay** part of a body of water that extends into land
**canyon** a narrow valley with steep, high sides
**cape** point of land that extends into water
**coast** land along the sea
**delta** a deposit of soil that collects at the mouth of a river
**divide** a ridge or highland that separates two river basins
**fjord** a narrow bay of the sea bordered by steep cliffs
**gulf** part of a body of water that extends into the land; often larger than a bay
**harbor** an area of deep water protected from winds, etc., that forms a place where ships may safely anchor
**hill** a raised part of the earth's surface; smaller than a mountain



**inlet** a narrow body of water that extends into the sea; smaller than a bay

**island** a body of land surrounded by water; smaller than a continent

**lake** an inland body of water

**mountain** high, rocky land; higher than a hill

**mountain range** a row of connected mountains

**mouth** the part of a river where its waters empty into a larger body of water

**peninsula** a body of land almost surrounded by water

**plain** a flat stretch of land

**plateau** flat or gently rolling land that stands high above sea level

**river** a large stream of water that flows through land

**sea** a large body of water, partly or wholly enclosed by land

**source** the place where a river begins, usually in highlands

**strait** a narrow channel that connects two larger bodies of water

**tributary** a stream or small river that flows into a larger river

**valley** low land that lies between hills or mountains

EUROPE
Black Sea
Caspian Sea
ARMENIA
Zagros Mountains
Tigris River
Mediterranean Sea
SYRIA
Syrian Desert
Euphrates River
PALESTINE
SUMER
EGYPT
Isthmus of Suez
Ur
Libyan Desert
Thebes
Persian Gulf
Red Sea
Nile River
Nubian Desert
AFRICA